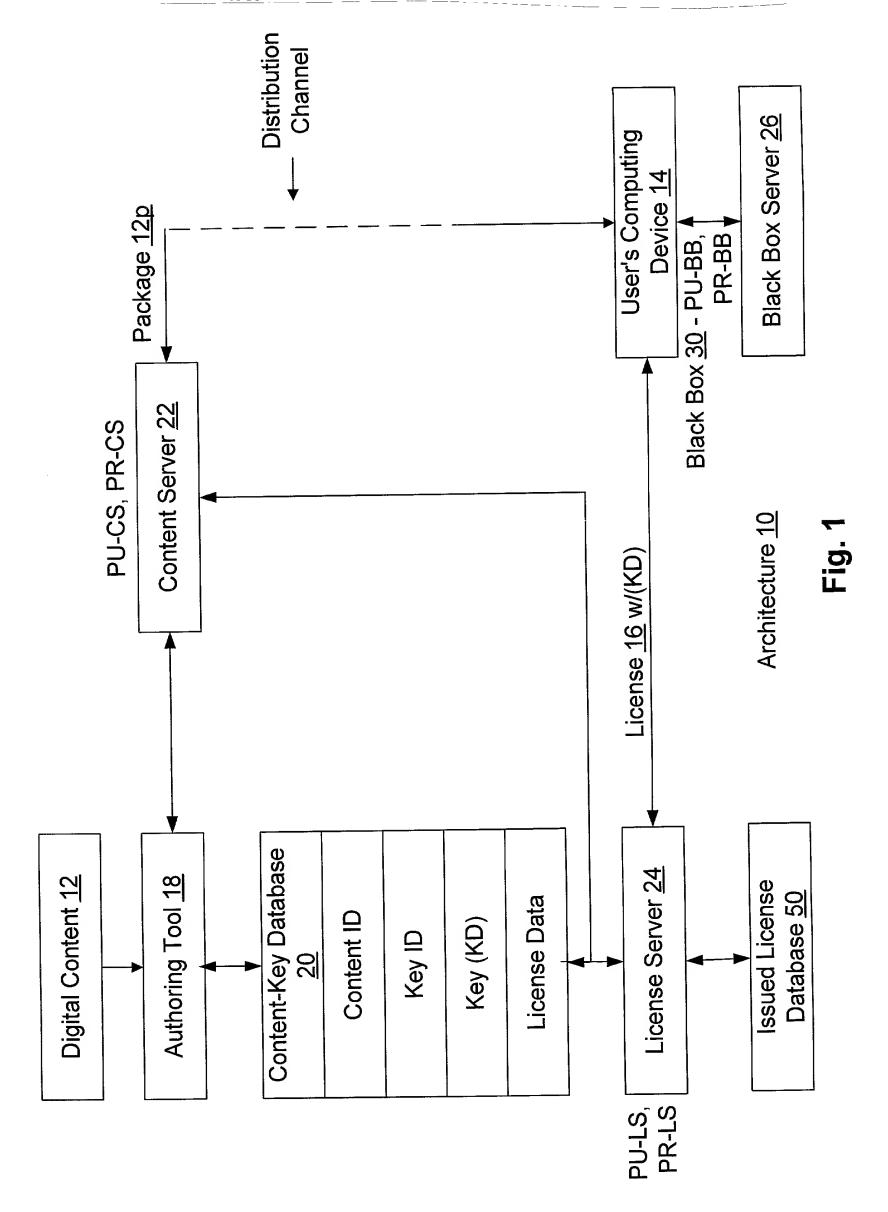Docket No.: MSFT-0310

Title: Binding a Digital License to a Portable Device or the Like in a Digital Rights Management (DRM) System and Checking Out/Checking in the Digital License to/from the Portable Device or the Like; Inventor(s): Marcus Peinado
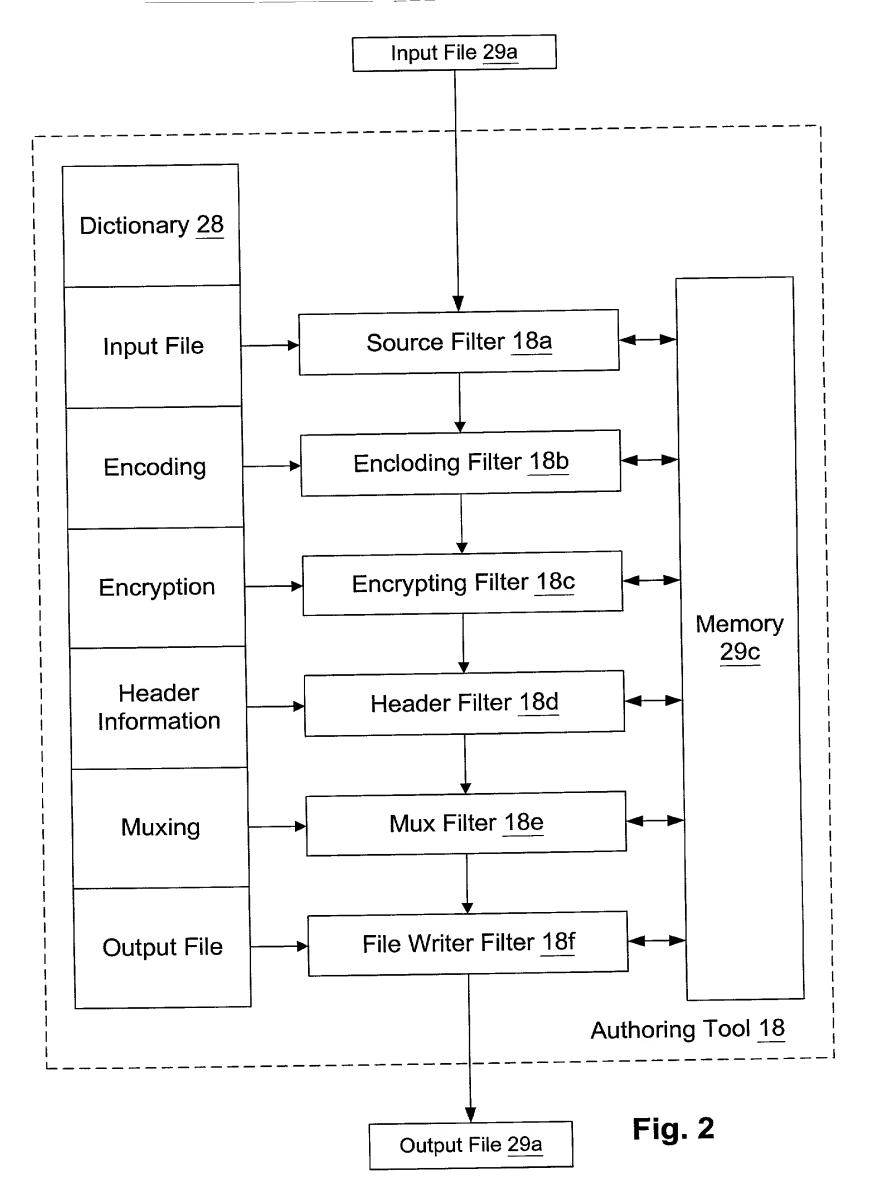
Sheet 1 of 16

Distribution Channel

Package 12p

PU-CS, PR-CS

Content Server 22

User's Computing Device 14

Black Box 30 - PU-BB, PR-BB

Black Box Server 26

License 16 w/(KD)

Architecture 10

Digital Content 12

Authoring Tool 18

Content-Key Database 20

Content ID

Key ID

Key (KD)

License Data

License Server 24

Issued License Database 50

PU-LS, PR-LS

Fig. 1

```
                              ┌─────────────────────┐
                              │   Input File 29a    │
                              └─────────────────────┘

┌ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┐
  ┌──────────────────────┐                                ┌──────────┐
│ │   Dictionary 28      │                                │          │ │
  │                      │                                │          │
│ ├──────────────────────┤   ┌──────────────────────┐     │          │ │
  │                      │   │                      │     │          │
│ │     Input File       ├──▶│   Source Filter 18a  │◀───▶│          │ │
  │                      │   └──────────────────────┘     │          │
│ ├──────────────────────┤                                │          │ │
  │                      │   ┌──────────────────────┐     │          │
│ │     Encoding         ├──▶│  Encloding Filter 18b│◀───▶│          │ │
  │                      │   └──────────────────────┘     │          │
│ ├──────────────────────┤                                │  Memory  │ │
  │                      │   ┌──────────────────────┐     │   29c    │
│ │     Encryption       ├──▶│ Encrypting Filter 18c│◀───▶│          │ │
  │                      │   └──────────────────────┘     │          │
│ ├──────────────────────┤                                │          │ │
  │     Header           │   ┌──────────────────────┐     │          │
│ │   Information        ├──▶│   Header Filter 18d  │◀───▶│          │ │
  │                      │   └──────────────────────┘     │          │
│ ├──────────────────────┤                                │          │ │
  │                      │   ┌──────────────────────┐     │          │
│ │     Muxing           ├──▶│    Mux Filter 18e    │◀───▶│          │ │
  │                      │   └──────────────────────┘     │          │
│ ├──────────────────────┤                                │          │ │
  │                      │   ┌──────────────────────┐     │          │
│ │    Output File       ├──▶│ File Writer Filter 18f│◀──▶│          │ │
  │                      │   └──────────────────────┘     │          │
│ └──────────────────────┘                                └──────────┘ │
                                                    Authoring Tool 18
└ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┘

                              ┌─────────────────────┐
                              │   Output File 29a   │          Fig. 2
                              └─────────────────────┘
```
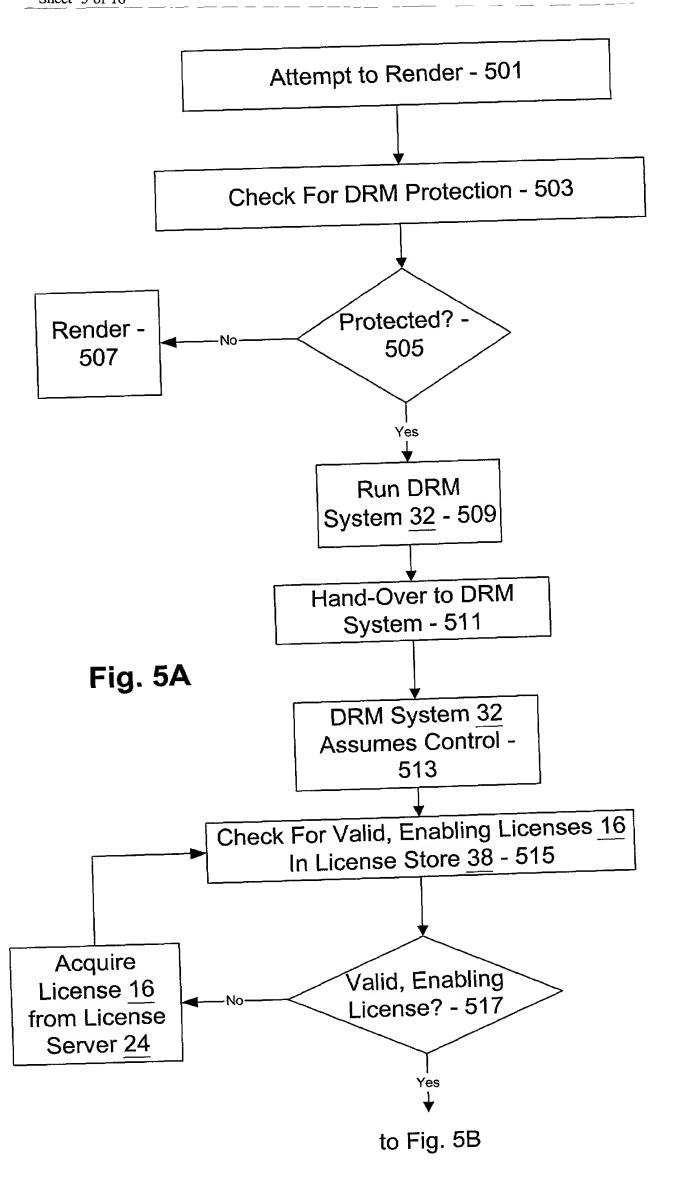
Docket No.: MSFT-0310
Title: Binding a Digital License to a Portable Device or the Like in a Digital Rights Management (DRM) System and Checking Out/Checking in the Digital License to/from the Portable Device or the Like
Inventor(s): Marcus Peinado; Sheet 3 of 16

License 16
Content ID
DRL 48 or KD (DRL 48)
PU-BB (KD)
S (PR-LS)
CERT (PU-LS) S (PR-CS)

Fig. 8

Digital Content Package 12p
KD (Digital Content 12)
Content ID
Key ID
License Acquisition Info
KD (PU-CS) S (PR-CS)

Fig. 3

Docket No.: MSFT-0310
Title: Binding a Digital License to a Portable Device or the Like in a Digital Rights
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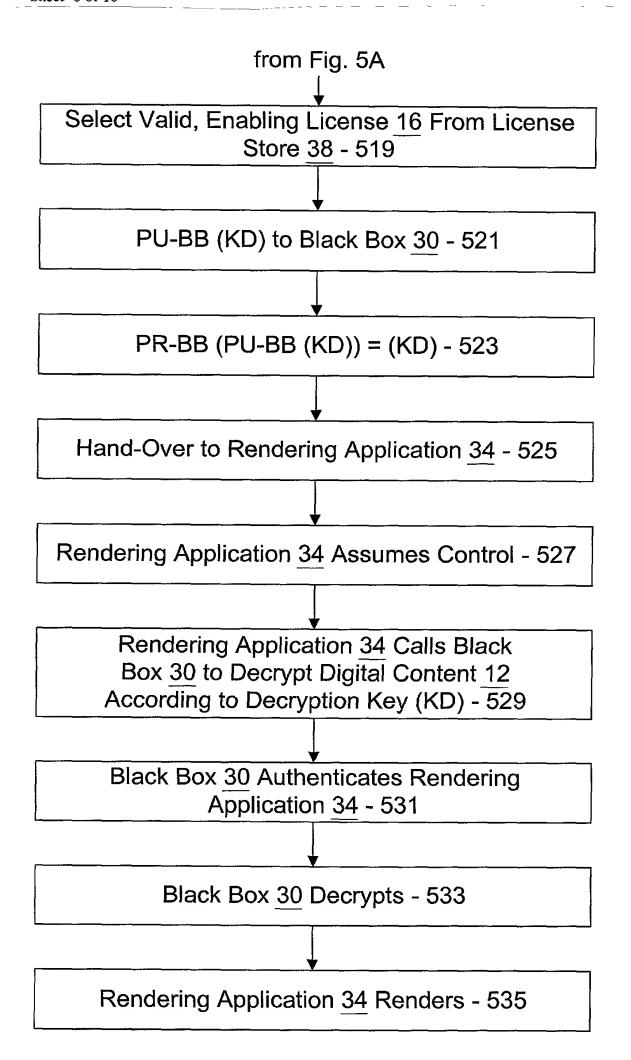Sheet 4 of 16

Fig. 4

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Title: Binding a Digital License to a Portable Device or the Like in a Digital Rights
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Portable Device or the Like; Inventor(s): Marcus Peinado
Sheet 5 of 16

Attempt to Render - 501

Check For DRM Protection - 503

Protected? - 505

No → Render - 507

Yes

Run DRM System 32 - 509

Hand-Over to DRM System - 511

Fig. 5A

DRM System 32 Assumes Control - 513

Check For Valid, Enabling Licenses 16 In License Store 38 - 515

Valid, Enabling License? - 517

No → Acquire License 16 from License Server 24

Yes

to Fig. 5B

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Title: Binding a Digital License to a Portable Device or the Like in a Digital Rights
Management (DRM) System and Checking Out/Checking in the Digital License to/from the
Portable Device or the Like; Inventor(s): Marcus Peinado
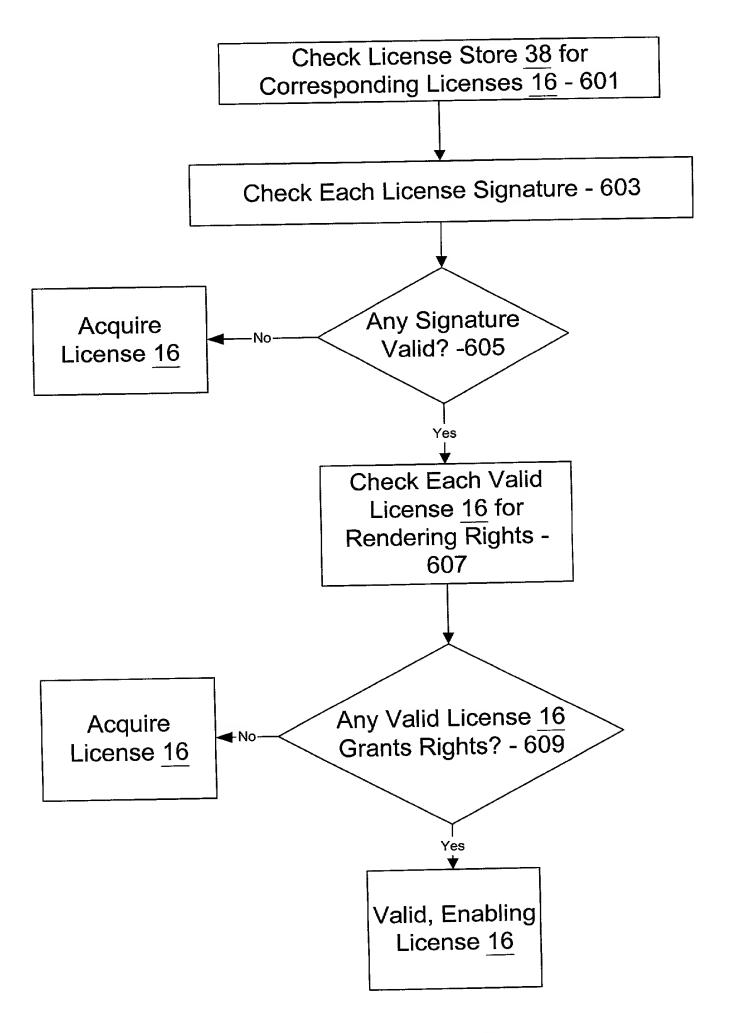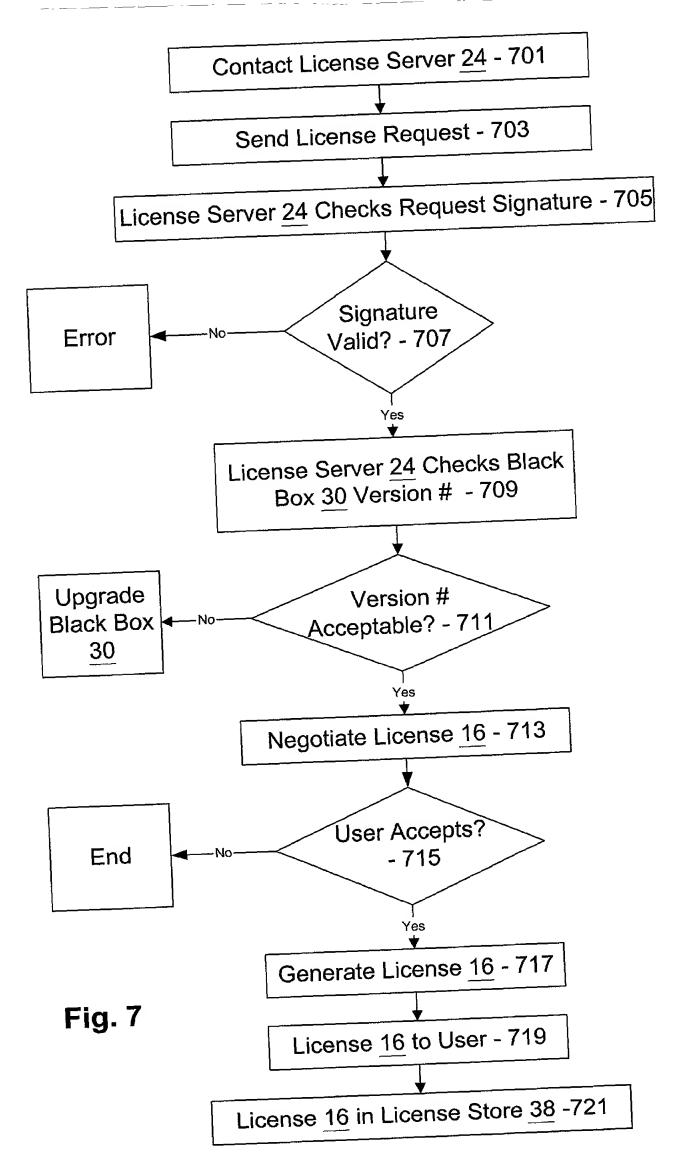Sheet 6 of 16

from Fig. 5A

```
Select Valid, Enabling License 16 From License
              Store 38 - 519
```

```
PU-BB (KD) to Black Box 30 - 521
```

```
PR-BB (PU-BB (KD)) = (KD) - 523
```

```
Hand-Over to Rendering Application 34 - 525
```

```
Rendering Application 34 Assumes Control - 527
```

```
Rendering Application 34 Calls Black
Box 30 to Decrypt Digital Content 12
According to Decryption Key (KD) - 529
```

```
Black Box 30 Authenticates Rendering
          Application 34 - 531
```

```
Black Box 30 Decrypts - 533
```

```
Rendering Application 34 Renders - 535
```

Fig. 5B

Docket No.: MSFT-0310
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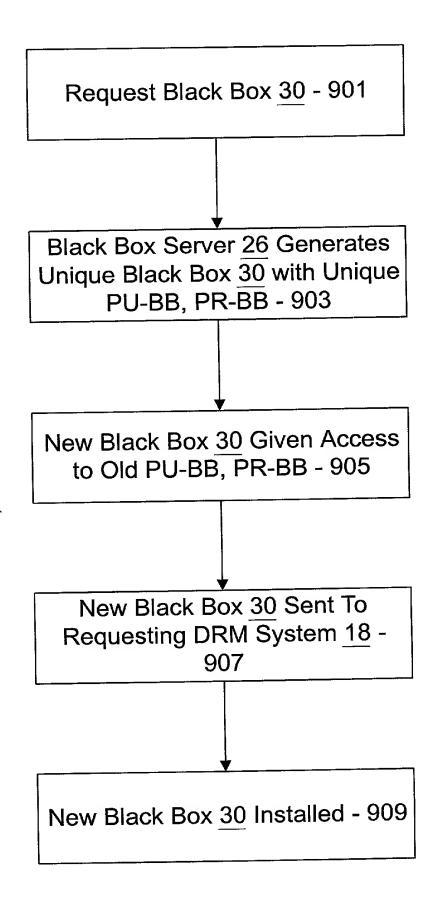Sheet 7 of 16

Check License Store 38 for
Corresponding Licenses 16 - 601

Check Each License Signature - 603

Any Signature
Valid? -605

—No→ Acquire
License 16

Yes

Check Each Valid
License 16 for
Rendering Rights -
607

Any Valid License 16
Grants Rights? - 609

—No→ Acquire
License 16

Yes

Valid, Enabling
License 16

Fig. 6

Docket No.: MSFT-0310
Title: Binding a Digital License to a Portable Device or the Like in a Digital Rights
Management (DRM) System and Checking Out/Checking in the Digital License to/from the
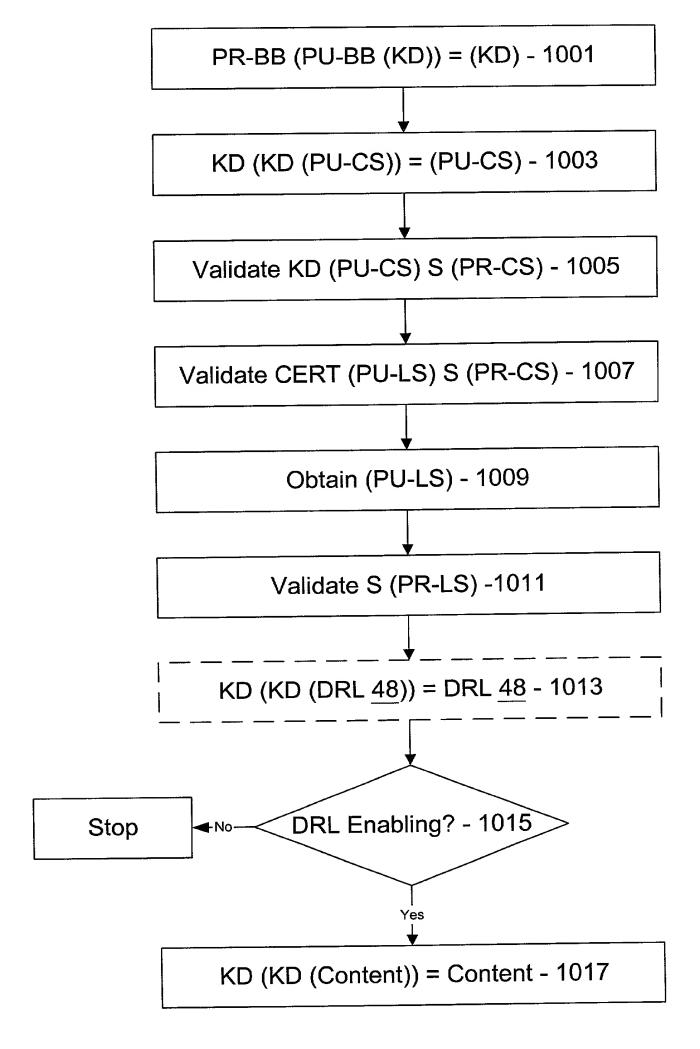Portable Device or the Like; Inventor(s): Marcus Peinado
Sheet 8 of 16

Contact License Server 24 - 701

Send License Request - 703

License Server 24 Checks Request Signature - 705

Signature Valid? - 707

Error ◄—No

Yes

License Server 24 Checks Black Box 30 Version # - 709

Version # Acceptable? - 711

Upgrade Black Box 30 ◄—No

Yes

Negotiate License 16 - 713

User Accepts? - 715

End ◄—No

Yes

Generate License 16 - 717

License 16 to User - 719

License 16 in License Store 38 -721

Fig. 7

Docket No.: MSFT-0310
Title: Binding a Digital License to a Portable Device or the Like in a Digital Rights
Management (DRM) System and Checking Out/Checking in the Digital License to/from the
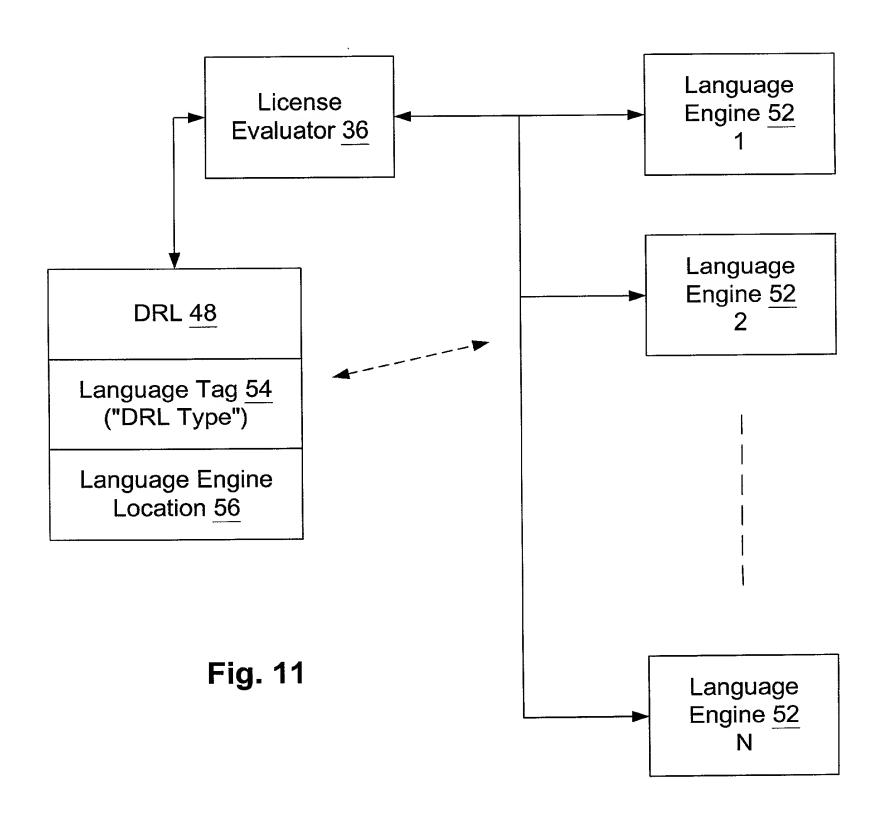Portable Device or the Like
Inventor(s): Marcus Peinado; Sheet 9 of 16

Request Black Box 30 - 901

Black Box Server 26 Generates
Unique Black Box 30 with Unique
PU-BB, PR-BB - 903

New Black Box 30 Given Access
to Old PU-BB, PR-BB - 905

New Black Box 30 Sent To
Requesting DRM System 18 -
907

New Black Box 30 Installed - 909

Fig. 9

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PR-BB (PU-BB (KD)) = (KD) - 1001

KD (KD (PU-CS)) = (PU-CS) - 1003

Validate KD (PU-CS) S (PR-CS) - 1005

Validate CERT (PU-LS) S (PR-CS) - 1007

Obtain (PU-LS) - 1009

Validate S (PR-LS) -1011

KD (KD (DRL 48)) = DRL 48 - 1013

DRL Enabling? - 1015

Stop ◄─No─

Yes

KD (KD (Content)) = Content - 1017

Fig. 10

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Fig. 11

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Fig. 12

Computer 120

Monitor 147

Storage Device 162

LAN 151

Network I/F 153

WAN 152

Remote Comp(s). 149

Modem 154

Memory 150

SCSI Bus 156

System Bus 123

Serial Port I/F 146

Keybd 140

Mouse 142

Host Adapter 155

Optical Drive I/F 134

Optical Drive 130

Storage 131

Video Adapter 148

Magnetic Disk Drive I/F 133

Floppy Drive 128

Storage 129

Processing Unit 121

Hard Disk Drive I/F 132

Hard Drive 127

OS 135

AP. PROGS 136

OTHER PROGS 137

PROG. DATA 138

System Memory 122

ROM 124

BIOS 126

RAM 125

OS 135

AP. PROGS 136

OTHER PROGS 137

PROG. DATA 138

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Management (DRM) System and Checking Out/Checking in the Digital License to/from the
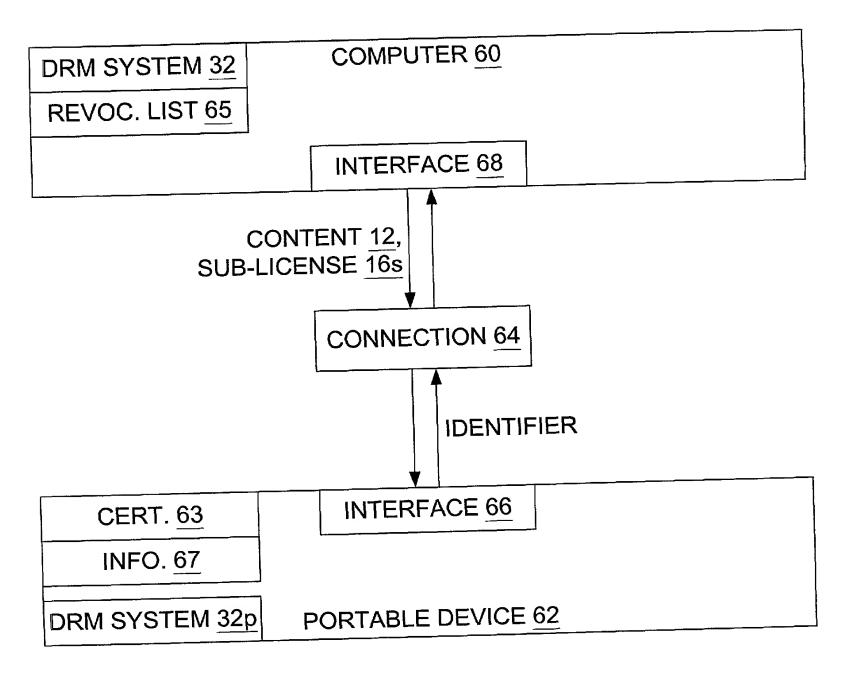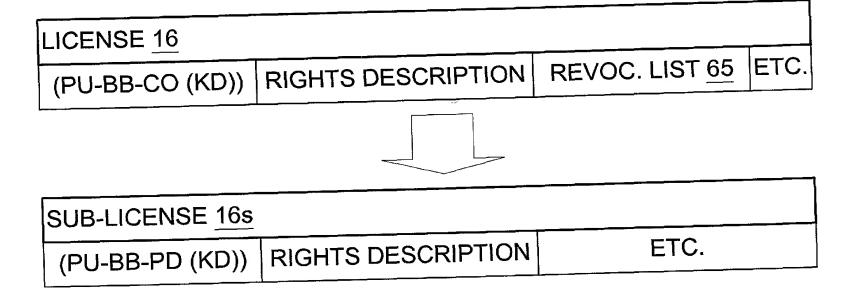Portable Device or the Like; Inventor(s): Marcus Peinado
Sheet 13 of 16

DRM SYSTEM 32	COMPUTER 60
REVOC. LIST 65	
	INTERFACE 68

CONTENT 12,
SUB-LICENSE 16s

CONNECTION 64

IDENTIFIER

CERT. 63	INTERFACE 66
INFO. 67	
DRM SYSTEM 32p	PORTABLE DEVICE 62

FIG. 13

LICENSE 16			
(PU-BB-CO (KD))	RIGHTS DESCRIPTION	REVOC. LIST 65	ETC.

SUB-LICENSE 16s		
(PU-BB-PD (KD))	RIGHTS DESCRIPTION	ETC.

FIG. 15

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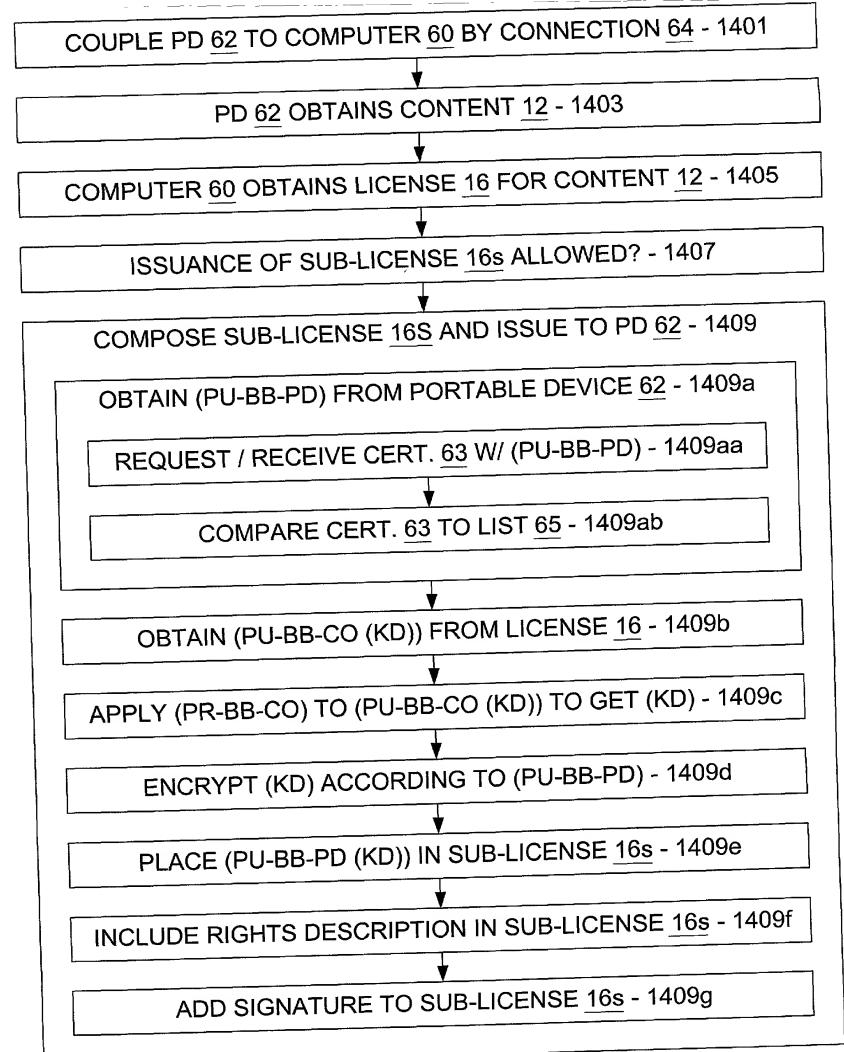Sheet 14 of 16

COUPLE PD 62 TO COMPUTER 60 BY CONNECTION 64 - 1401

PD 62 OBTAINS CONTENT 12 - 1403

COMPUTER 60 OBTAINS LICENSE 16 FOR CONTENT 12 - 1405

ISSUANCE OF SUB-LICENSE 16s ALLOWED? - 1407

COMPOSE SUB-LICENSE 16S AND ISSUE TO PD 62 - 1409

OBTAIN (PU-BB-PD) FROM PORTABLE DEVICE 62 - 1409a

REQUEST / RECEIVE CERT. 63 W/ (PU-BB-PD) - 1409aa

COMPARE CERT. 63 TO LIST 65 - 1409ab

OBTAIN (PU-BB-CO (KD)) FROM LICENSE 16 - 1409b

APPLY (PR-BB-CO) TO (PU-BB-CO (KD)) TO GET (KD) - 1409c

ENCRYPT (KD) ACCORDING TO (PU-BB-PD) - 1409d

PLACE (PU-BB-PD (KD)) IN SUB-LICENSE 16s - 1409e

INCLUDE RIGHTS DESCRIPTION IN SUB-LICENSE 16s - 1409f

ADD SIGNATURE TO SUB-LICENSE 16s - 1409g

FIG. 14

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OBTAIN INFO. 67 FROM CERT. 63 - 1407a

APPLY INFO. 67 TO DET. WHETHER LICENSE 16 ALLOWS SUB-
LICENSE 16s - 1407b

FIG. 14A

VERIFY SUB-LICENSE 16s BASED ON SIG. AND (PR-BB-PD) - 1601

APPLY (PR-BB-PD) TO (PU-BB-PD (KD)) TO OBTAIN (KD) - 1603

APPLY (KD) TO DECRYPT ENCRYPTED CONTENT 12 - 1605

FIG. 16

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Management (DRM) System and Checking Out/Checking in the Digital License to/from the
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REQUEST / RECEIVE NONCE FROM PORTABLE DEVICE 62 - 1701

↓

SEND CHECKED-OUT SUB-LICENSE 16s AND RECEIVED NONCE TO PORTABLE DEVICE 62 - 1703

↓

NONCE SENT = NONCE RECEIVED - 1705

↓

SENT SUB-LICENSE 16s IS LEGITIMATE - 1707

↓

ADD ENTRY FOR CHECKED-OUT SUB-LICENSE 16s FOR PORTABLE DEVICE 62 TO CATALOG 70 - 1709

↓

DELETE CHECKED-OUT SUB-LICENSE 16s FROM PORTABLE DEVICE 62 - 1711

↓

REQUEST / RECEIVE NONCE FROM COMPUTER 60 - 1713

↓

SEND RECEIVED NONCE, AN PORTABLE DEVICE 62 IDENTIFIER, LIST OF ALL SUB-LICENSES 16s RESIDENT TO COMPUTER 60 - 1715

↓

NONCE SENT = NONCE RECEIVED - 1717

↓

SENT IDENTIFIER AND LIST IS LEGITIMATE - 1719

↓

COMPARE SENT LIST WITH CATALOG 70 AND NOTE ABSENCE OF DELETED CHECKED-OUT SUB-LICENSE 16s FROM SENT LIST - 1721

↓

DELETE ENTRY FOR CHECKED-OUT SUB-LICENSE 16s FOR PORTABLE DEVICE 62 FROM CATALOG 70 - 1723

FIG. 17